


AMSAT SATELLITE REPORT

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Annual Meeting Weekend Recap

The weekend of the annual meeting got under way on Friday, October 8 with a special series of meetings of the packet radio interest group. (See story elsewhere.) On Saturday the action shifted to the Applied Physics Laboratory of the Johns Hopkins University where W3XO and W3OZ hosted the several dozen seminar goers. The attendees were treated to excellent presentations by W1HDX showing his 100 watt L-band transmitter system, WA7GXD with his 1269 MHz solid state amplifier, W3GEY with the Phase IIIB Mode B test data and others.

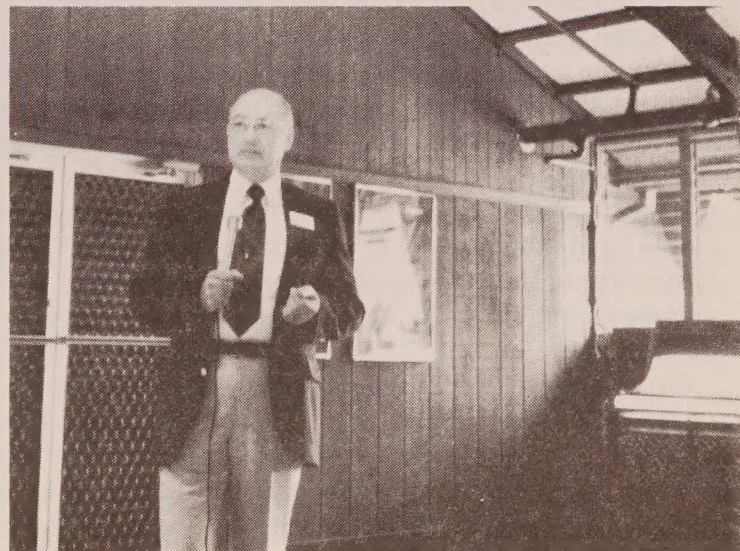
On Sunday the day began with the packeteers meeting at Goddard Space Flight Center offices while others began opening up the Goddard Recreation Center and enjoying coffee and good conversation. The official meeting began around 2 PM with presentations from W3IWI, W6SP, W3GEY, W4PUJ, W9KDR, WA2LQQ and others. The election results were read and afterwards the meeting was adjourned.

NASA Considers Space Shuttle Proposal

The National Aeronautics and Space Administration (NASA) has received an unsolicited proposal from ARRL to include an informal amateur radio activity on its ninth shuttle mission presently scheduled for October 1983.

The proposal would have Dr. Owen Garriot, W5LFL, who will be one of the four person crew aboard Space Transportation System 9 (STS-9), carry an amateur transceiver and to engage in "hamming from space" during crew leisure time. The overall concept seems to have garnered favor in several quarters and chances are said to be favorable for final adoption according to knowledgeable sources. Informal work on the astronaut-ham-in-space concept dates at least to the Apollo mission series with NBC correspondent Roy Neal, K6DUE, among the more prominent proponents of the concept.

A number of key government agencies, amateur radio organizations, amateur and professional journalists are involved at this stage. Organizing the proposal on behalf of amateur radio is ARRL President Vic Clark, W4KFC. Vic is shepherding the diverse forces aiming to have NASA Headquarters bless the mission. Supporting W4KFC is the ARRL Newington Staff under General Manager Dave Sumner, K1ZZ. The key player at New-



W6SP makes a point at the annual meeting.

ington is Bernie Glassmeyer, W9KDR, ARRL's Satellite Program Coordinator who was instrumental in bringing the idea to ARRL HQ attention and marshalling the ARRL diamond behind the concept. Bill Tynan, W3XO, who has been touting much the same concept as K6DUE for a decade is providing much of the proposal text for W4KFC. W3XO's effort represents AMSAT's collective opinion on how best to propose a workable concept while maximizing both its chances for adoption and public appeal. Amateurs at NASA's Johnson Space Flight Center (Houston) and Marshall Space Flight Center (Huntsville, Alabama) are also contributing to the proposal effort. Significantly, AMSAT's Dick Daniels, W4PUJ, is on the receiving end of the proposal since he is a NASA employee who, because of his intimate working knowledge of the amateur space program, has been charged by NASA to provide the requisite review of the proposal for senior management. Thus, although Dick is not in an executive capacity on this assignment, (he is NOT the one to give the green light), his guidance assures that ARRL's proposal will be the best it can be by providing feedback to the proposal writers.

Planning for operation of a ham station from STS-9 has already begun informally even though formal approval of the concept is still a couple of weeks away according to ARRL and AMSAT sources. W9KDR has invited all interested amateurs to suggest through their ARRL Division Directors how best to utilize this fascinating opportunity should it be approved. AMSAT will be providing

technical support for the operations planning activity and lend specific guidance in areas where AMSAT's space communications experience is required. AMSAT members who have suggestions for operations planning for STS-9 may communicate them either to AMSAT HQ or ARRL. Ideas sent to ARRL should be addressed to the attention of W9KDR.

A number of ground rules need to be stated before serious planning begins, however. Although very few rules form the present baseline plan, a few things are clear even at this early stage. First, the installation has to be very, very simple. That likely means a handheld vhf/uhf transceiver in the crew cabin and a ground plane antenna in the cargo bay of the Shuttle. Any complexity proposed beyond that would likely meet disapproval. Second, the frequency selected for operations would likely be the one with the greatest user equipment base above 50 MHz, that is the 2 meter band. Beyond this, however, very little is certain, except that if done well this enterprise could be an absolute boon to amateur radio by exposing hams to the the general populace in a very enviable light. "Gee...hams get to talk to astronauts." That in turn could pay big dividends in new hams, new ARRL members and...dear to AMSAT's coffers, new AMSAT members.

On the other hand, if the operations planning is inadequate or operations go awry for whatever reason, hamdom may suffer a blackeye it will not soon get over. Thus a great deal of well thought through planning must precede actual operations if a potential public relations disaster is to be averted.

It is likely that the strong presence of NBC's Roy Neal, K6DUE, will assure coverage of the shuttle-hams if it happens as planned. Roy has been an ever-present proponent of hams-in-space and appeared at a number of AMSAT and Project OSCAR forums including AMSAT's Dayton Hamvention presentation earlier this year. So if plans are approved, it may be that the story is picked up by the major news services (AP, UPI, Reuters, etc.) as well as the TV networks.

Several amateur newsletters have already carried the story although ARRL has avoided comment on the mission to this point since it is still under consideration by NASA. As of 5 November the proposal was still under review at NASA. AMSAT likewise has only acknowledged the existence of the proposal and offered modest interpretations of what it may signify. According to ASR Editor WA2LQQ, "It is usually wise to underreport at this stage of negotiations. Besides...the other tabloids have already said it all...including a lot of plain baloney. Somewhere in that mass the truth lies; ASR will provide an effective 'baloney shovel' when the time is right!"

Paris Meeting Sets Stage for Co-op

As reported in ASR #43/44, an important meeting was held in Paris October 2 through 4. Builders of amateur satellite hardware met in Paris to set the stage for future cooperative efforts in amateur satellite and amateur space technology.



The Gould-Biomation donated logic analyzer.

The meeting was timed to coincide with the 32nd Congress of the International Astronautics Federation. Host for the amateur satellite meeting was RACE (Radio Amateur Club De L'Espace) President Jean Gruau, F8ZS. Jean is also Inspector General of CNES, the French National Space Agency. Also attending representing the ARSENE (Ariane Radio-Amateur Satellite Enseignement Espace) project were RACE Vice President Michel Danvel, F8YY, and Pierre Bricard, F8FV, Membre Du Conseil.

Representing AMSAT DL was President Dr. Karl Meinzer, DJ4ZC. The U.S. was represented by AMSAT President Dr. Tom Clark, W3IWI, Jan King, W3GEY and Dick Daniels, W4PUJ. Dr. Bandi Gschwindt, HA5WH, spoke for the Hungarians while ZS1FE, Gordon Hardman, represented the South Africans. Dr. Martin Sweeting, G3YJO, UoSAT Project Manager and G8DQX, Robin Gape, attended for Britain. Miki Nakayama, JR1SWB, spoke for JAMSAT and SM0NBJ attended as an observer representing newly organized AMSAT SM.

On the meeting agenda for the amateur delegates was a review of the hardware activities of the various groups and impressive presentations were given by several of the delegations. The group discussed methods that might be employed to bring new groups on line to participate in the world amateur radio satellite community. A discussion ensued on how best to utilize the very limited number of available launches to the best advantage. Informal arrangements were made to establish liaison between specific elements of each group for the express purpose of facilitating cooperation and increasing overall productivity and efficiency. Methods for band-planning and frequency coordination were discussed and aspects of the Phase IIIC, PACSAT, Shuttle Mission STS#9 and the ARNET geo-sync proposal were examined.

ASR has learned that, in a very significant development, the IAF will have amateur satellites on its official agenda for next year's congress, the 33rd, to be held in Budapest, Hungary.

The Paris meetings proved very worthwhile according to AMSAT President W3IWI and should prove a cornerstone for future cooperative efforts Tom said. The only disappointment, apparently, was the absence of the Russian delegation who sent their regrets at being unable to attend while simultaneously recognizing the value of the meeting.

UoSAT Continues In Test Phase

Engineering evaluation tests continue on UoSAT-OSCAR 9 while many wait anxiously on the sidelines. Advice from Surrey has it that progress is being made and that when all is in order the various experiments will be turned on. Over recent weeks the following bits have been extracted:

*UO-9 is spinning on its Z-axis at less than 6 RPM; despin has begun and about 5 percent of the remaining angular momentum can be dissipated on each orbit within range of Surrey. Despin and reorientation is being performed on a closed loop basis through a ground computer. Magnetometer data is transmitted to the Surrey earth station on 70cm and magnetorquer commands are uplinked to UO-9 on the 2 meter command channel. The Z-axis was perpendicular to the plane of the orbit. After spin-down, rectification would take place so as to orient the Z-axis towards the geo-center. Deployment of the gravity-gradient boom can then proceed.

*The radiation counter is apparently OK despite the indications on telemetry channel 13 which has been indicating no EHT voltage. G3YJO at Surrey believes the problem is in the telemetry sensor; not the EHT power supply.

*The CCD camera has been tested with mixed results; noisy picture was reported to be caused by QRM on the ground but further test will be performed as priorities allow.

*UO-9 will likely not be on during the week except when over Europe while attitude adjustment is proceeding. If on over the weekend look for 300 baud and 45.5 baud on 2 meters (145.825 MHz).

*Some strange symptoms of current drain have showed up on the secondary (Ferranti F100) computer. The computer memory may be showing signs of radiation damage. The primary computer is in good shape.

*G3AAJ will be evaluating the merits of going into production on the CCD decoder boards soon.

Long-Haul Packet Test Successful

On 16 October 1982, from 16:45 UT until 17:00 UT, a successful long-haul Packet Radio demonstration QSO took place between Maryland and Texas; the stations involved were Bob Diersing, N5AHD in Corpus Christi and Tom Clark, W3IWI near Washington. The QSO took place on the 10 meter band at 28.300 kHz with both stations running FSK at a 1200 baud rate using HDLC protocol currently accepted as amateur radio standards.

This demonstration represents another phase of the AMSAT activities to advance the state-of-the-art in amateur radio communications technology development and the tests were conducted to test the suitability of various existing hardware and protocols under weak-signal and QRM conditions in anticipation of the AMSAT Phase IIIB satellite launch in April, 1983, and to help in the planning of future satellite missions including a possible dedicated packet radio mission a few years from now.

The demonstration QSO took place just one week after a landmark meeting held under AMSAT's auspices

to establish and coordinate common packet radio protocols. (See related story.)

During the long-haul test, both N5AHD and W3IWI were using special 8085 microprocessor-based Terminal Node Controller (TNC) hardware developed in Canada by the Vancouver Area Digital Group (VADG), equipped with software developed in Vancouver, San Francisco and Washington. They both used conventional "202A" FSK modems operating through 100 watt ssb transceivers. A number of packets were successfully exchanged in both directions and the TNC board's software automatically verified the accuracy of each transmission. The HDLC protocol dictates that if any error is detected, the transmitting station re-tries until an error-free copy is received. In the test QSO, the number of re-tries required never exceeded three. The stations had conducted previous long-haul test experiments through the AMSAT-OSCAR 8 satellite.

W3IWI has been involved in a number of previous AMSAT demonstration tests including initial feasibility demonstrations using the AMSAT-OSCAR 6 and 7 satellites which led to the international Search-and-Rescue Satellite (SARSAT) program to locate downed aircraft, and tests of digital phase-shift keying (PSK) techniques to be employed on the Phase III satellite series. N5AHD has developed automated, real time telemetry acquisition techniques for the UoSAT-OSCAR 9 satellite and operates AMSAT's Computer Bulletin Board System (CBBS) which can be accessed at (512) 852-8194. Both N5AHD and W3IWI have been frequent contributors of amateur radio software which is available through the AMSAT Software Exchange (ASE). Further information about AMSAT, ASE or AMSAT's CBBS can be obtained by calling the CBBS or by writing:

AMSAT
Box 27
Washington, DC 20044

Convention Attracts OSCAR Advocates

The Hudson Division ARRL Convention was held at the Americana Hotel, Great Gorge, New Jersey on 29-31 October. AMSAT was invited to participate by providing a program of Phase III-interest. AMSAT's WA2LQQ moderated the forum on Saturday, 30 October before an enthusiastic crowd of present and would-be OSCAR-users.

Steve Robinson, W2FPY, Director of R&D, spoke of the virtues of the Phase III orbit for hamming. Phil Karn, KA9Q, showed his fabulous computer simulation video tape of what the earth will look like from the Phase IIIB orbit and explained how it was developed and what were its implications for DX on the satellite.

WA2LQQ narrated a new set of slides provided by W4PUJ which included much of the new Phase IIIB hardware including the new fuel tank and propellant flow assembly that Dick, W4PUJ, had designed and built. A question and answer period followed and hundreds of handouts were distributed. According to WA2LQQ the interest level seemed as high as it has ever been in Phase III.

Claims First IHU IPS

In ASR #32 we said that ZL1AOX was believed to be the first of the AMSAT Phase III ground command stations to get the IPS system running in the IHU (integrated housekeeping unit). Now we are told by Chief Ground Commander John DuBois, W1HDX, that "It was in fact I who have this distinction" by doing so "on Aug. 27, 1981, about 4 months before ANYONE else reached this point (except of course Karl [DJ4ZC] who did it 2½ years earlier)." Well ASR now sets the record out straight (we trust).

British Satellite Discrimination Told

ASR has been informed of an attempt to discriminate the roles of two prominent British amateur satellite officials. ASR is therefore pleased to assist thusly: Mr. Pat Gowen, G3IOR, is AMSAT Chief Area Coordinator for Europe and Africa and AMSAT Phase IIIB Special Service Channel (SSC) Coordinator for Europe and Africa. Mr. Ron Broadbent, G3AAJ, is AMSAT Phase IIIB Bulletin Program Manager for IARU Region 1 and AM-

SAT Phase IIIB Bulletin Program Manager for RSGB. ASR believes, based on the foregoing, that the functional organization as described overlaid on the inherent international matrix organization can be easily depicted by placing exactly 18 white placards on a desk. Lines of authority and staff relations can then be depicted by dropping a fresh bowl of linguini thereon. AMSAT hereby grants an interlocutory decree of confusion. Got that?

New QSL Bureau Manager Named

AMSAT HQ announces the appointment of Perry Yantis, WB8OTH, as AMSAT QSL Bureau Manager. Although the appointment is effective immediately, the transition plans from the former manager to WB8OTH are incomplete at this writing. As reported in ASR #43/44, WB2LCC, who had been QSL Bureau Manager for several years, was recently obliged to resign because of mounting personal commitments which precluded his continuation. WB8OTH is from Columbus, Ohio and will be establishing and publishing instructions for the new QSL Bureau operation as soon as possible. AMSAT expresses its sincere thanks to both WB2LCC and WB8OTH!